S
363.25
J5m
1982
Dec

PLEASE RETUR

Montana State Library
3 0864 1006 2395 1

STATE OF MONTANA
DIVISION OF FORENSIC SCIENCE
DEPARTMENT OF JUSTICE
275 West Front Street, Missoula, MT 59802 (406) 728-4970

Ronald L. Rivers, M.D.
State Medical Examiner

Arnold B. Melnikoff
Laboratory Bureau Chief

Dawn M. Kangas
Administrative Assistant

SHELVED WITH
PERIODICALS

DECEMBER 1982

STATE DOCUMENTS COLLECTION

JUN 9 - 1983

MONTANA STATE LIBRARY
1515 E. 6th AVE.
HELENA, MONTANA 59620

TOXICOLOGY

It is a terrible mistake to order a drug screen and think the laboratory is testing for every conceivable substance. There are hundreds of thousands of drugs and poisons. Thousands require special tests and equipment. For some we have the capability, for others we do not. A drug screen will test for commonly used tranquilizers, sedatives and narcotics. The toxicologist will try to determine any unusual substance that may appear during a screen, but many will not show up. If there is a good written history submitted with the sample it may tip the toxicologist toward what to look for. The following substances are not routine and require a separate procedure. They must be specifically requested.

Aspirin
Carbon Monoxide and other gases
Ethylene Glycol (antifreeze)
Cyanide
Arsenic
Placidyl^{R} (ethchlorvinyl) and chloral hydrate
L.S.D., Marihuana and Psilocybin
Insecticides and herbicides
Insulin, digitalis, and antibiotics*
Lead, lithium, iron

*antibiotic and vitamin tests cannot be done by our lab.

NATIONAL MEDICAL EXAMINERS ASSOCIATION

Disaster planning, media management and violent deaths were among the many subjects presented to nearly fifty medical examiners throughout the United States and Canada. Dr. Rivers was elected to the Board of Directors at this last scientific seminar.

MERRY CHRISTMAS and HAPPY NEW YEAR!

ON CALL SCHEDULE - MONTANA STATE MEDICAL EXAMINER

DECEMBER 1982

275 W. Front Street
Missoula, Montana 59802

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
			1	2	3	4 RON RIVERS
5 RON RIVERS	6	7	8	9	10	11 RON RIVERS
12 RON RIVERS	13	14	15	16	17	18 RON RIVERS
19 RON RIVERS	20	21	22	23	24	25 KEN MUELLER
26 KEN MUELLER	27	28	29	30	31	

Telephone Numbers: State Office - 728-4970
WATS Line - 243-5796

Home Phone: Dr. Ron Rivers- 728-2033 (Home)
(week nights call unless otherwise indicated)

Dr. John Pfaff - Great Falls
Hospital - 727-3333
Home - 727-3905

Dr. Ken Mueller- Billings
Hospital - 657-7000
Home - 248-3024

December 1982
Cyanide Poisoning
R. L. Rivers, M.D.

QUESTIONS:

1. What is the most likely manner of death assuming the cause of death is cyanide poisoning?

2. Was Dr. Rivers correct in his statement?

3. Were the faint red areas around the mouth significant?

4. Are there any significant findings of cyanide poisoning at an autopsy.

5. Why couldn't the physician smell the cyanide?

6. Besides the chemistry lab, what are some other sources of cyanide?

ANSWERS:

1) The boy committed suicide. The facts that he was a chemist with access to cyanide, had a pregnant girlfriend, and a recent argument with her father would point in this direction. Upon further questioning, the father would admit to demanding an abortion.

   The manner of death for the girl is another situation. Suicide pacts are rare but do occur. More frequently one partner kills the other before doing themself in. So the girl may be a suicide or a homicide. Without any additional facts her death may have to be ruled undetermined.

2) Of course!

3) Cyanide, as well as acids and alkalis, are corrosive to the thinly skinned areas of the mouth and nose. Many victims will vomit these substances before dying. The stewardess victim of the Tylenol poisoning in Chicago had telltale corrosive marks around her mouth and nose.

4) The most significant finding at autopsy is an intense dark red discoloration of the stomach lining. This is hemorrhagic necrosis and I haven't seen any other substance or disease that looks quite like it. I have yet to see the pink colored lividity described as being associated with cyanide poisoning.

December 1982
Cyanide Poisoning
R. L. Rivers, M.D.

The ambulance screeched into the emergency room parking lot of the Community Hospital.

"Doc, looks like we've got a couple of carbon monoxide poisonings here. This fellow and his pregnant girlfriend were both found in bed at his apartment. The girl's father found them."

"Any vital signs, Fred?"

"Nope, but the father insisted we bring em on in. I think he felt a little guilty since he just had a big argument with them."

"Any unvented gas space heaters in the apartment?", the physician asked.

"I didn't see any, but Doc Rivers always says suspect carbon monoxide when you see two or more dead in a room without evidence of violent injury."

"Hmmm", remarked the E.R. physician as he noted some faint red areas around the corners of the victims mouths. "Were they eating or drinking in bed?"

"Nothing at all, Doc, but there were some medicine bottles on the bedside stand."

"Did you bring them in?"

"Sure did and I cleaned out the medicine cabinet too", Fred boasted.

"As the doctor sniffed around the mouths of the victims he asked, "Fred, I can't smell anything here, can you?"

"Whew!", Fred exclaimed, "Smells like bitter almonds."

"Let me see that bag of medicines you confiscated." As the doctor searched through the bottles he remarked, "Well, there isn't any Extra-Strength Tylenol here but look at this. It looks like a chemical bottle."

"The father did state that the boyfriend was a chemistry student."

ANSWERS CONTINUED:

5) Perhaps the most significant finding at a cyanide autopsy is the pungent odor of bitter almonds. Unfortunately, more than 20% of us have inherited a factor preventing us from smelling cyanide.

6) Cyanides are used in electroplating, photography, ore processing and fumigation. Non-lethal cases of cyanide poisoning have been reported after ingestion of Laetrile, bitter almonds and apricot pits. Animal poisoning by cyanide-containing fruits and grasses has long been recognized as a problem in veterinary medicine.

A minimal lethal dose of cyanide has been estimated at 50 mg or 0.5 mg per kg of body weight. There does not appear to be an ideal antidote. Cyanide is one of the most potent, rapidly acting poisons encountered in forensic science. Cyanide gas is the most lethal and 0.2 - 0.3 mg per liter of air is fatal almost immediately. This is why it is the agent of choice in gas chambers utilized for judicial executions. It may be produced in fires involving nitrogen containing materials.

References:

"The Pathology of Homicide" Lester Anderson. 1974

"Cyanide Poisoning after Bitter Almond Ingestion" Thos. Shragg, et al. Western Journal of Medicine. Jan 1982

"Disposition of Toxic Drugs and Chemicals in Man" Randall Baselt. 1982